

1 **IN THE CLAIMS:**

2
3 Please cancel claims 13-23 and amend claims 1, 3, and 7:

4
5 1. (Amended) A [gas-liquid contact] system for controlling the temperature and
6 humidity of a gas, comprising:

7 a contactor, including contact media, a gas inlet and a gas outlet, a liquid inlet and a
8 liquid outlet, wherein the liquid inlet admits a liquid above the contact media and the gas inlet
9 admits gas below the contact media, and the liquid and gas flow [through] external to the
10 contact media such that the gas leaves through the gas outlet in saturated state;

11 a heater;

12 a chiller for chilling the liquid;

13 a gas outlet line connecting the gas outlet to the heater;

14 a liquid outlet line connecting the liquid outlet to the chiller, wherein the liquid flows [in a
15 closed loop] through the liquid inlet, the contactor, the liquid outlet and the chiller;

16 a [first gas] saturated temperature sensor associated with the gas outlet line and
17 upstream of the heater;

18 a [second gas] dry bulb temperature sensor associated with the gas outlet line and
19 downstream of the heater;

20 a gas temperature set point;

21 a relative humidity set point; and

22 a controller, including a computer, coupled to the saturated temperature sensor, the dry
23 bulb temperature sensor, the gas temperature set point, the relative humidity set point, and the
24 computer, wherein the saturated temperature sensor, the relative humidity set point, and the
25 gas temperature set point are inputs to the computer to produce a command signal adjusting
26 the cooling rate of the chiller, wherein the dry bulb temperature sensor and the gas temperature
27 set point are inputs to the computer to produce a command signal adjusting the heating rate of
28 the heater [the first and second gas temperature sensors and the heater], wherein the controller
29 [and] adjusts the heater and the chiller to deliver the gas from the heater at a desired
30 temperature and relative humidity.

3. (Amended) The system of claim 2, wherein the [housing is cylindrical in shape,]

the contactor further comprises a housing and the sprinkler includes at least one arm with a plurality of orifices along the arm and pointed between parallel and opposite the top of the contact media and wherein the sprinkler engages in self-rotation from reactive force exerted against the arm(s) from distribution of the liquid from the orifices.

1 7. (Amended) A system of controlling the temperature [, the relative humidity,] and
2 [the cleanliness] humidity of air, comprising:
3 [an air-water] a contactor, including a housing with contact media, an air inlet and an air
4 outlet, a water inlet and a water outlet, wherein the water inlet admits [a] water above the
5 contact media and the air inlet admits air below the contact media, and the water and air flow
6 [through] external to the contact media such that the air leaves through the air outlet in
7 saturated state;
8 a heater;
9 a chiller for chilling the water;
10 [a filter];
11 an air outlet line connecting the air outlet to the heater;
12 a water outlet line connecting the water outlet to the chiller, wherein the water flows [in a
13 closed loop] through the water inlet, the contactor, the water outlet and the chiller;
14 a [first] saturated air temperature sensor associated with the air outlet line and upstream
15 from the heater;
16 a [second] dry bulb air temperature sensor associated with the air outlet line and
17 downstream from the heater;
18 an air temperature set point;
19 a relative humidity set point; and
20 a controller, including a computer, coupled to the saturated air temperature sensor, the
21 dry bulb air temperature sensor, the air temperature set point, the relative humidity set point,
22 and the computer, wherein the saturated air temperature sensor, the relative humidity set point,
23 and the air temperature set point are inputs to the computer to produce a command signal
24 adjusting the cooling rate of the chiller, wherein the dry bulb air temperature sensor and the air
25 temperature set point are input to the computer to produce a command signal adjusting the
26 heating rate of the heater [the first and second air temperature sensors and the heater], wherein
27 the controller [and] adjusts the heater and the chiller to deliver the air from the heater at a
28 desired temperature and relative humidity.
29
30

1 Please enter claims 1, 3, and 7 in clean form as follows:

2
3 1. A system for controlling the temperature and humidity of a gas, comprising:
4 a contactor, including contact media, a gas inlet and a gas outlet, a liquid inlet and a
5 liquid outlet, wherein the liquid inlet admits a liquid above the contact media and the gas inlet
6 admits gas below the contact media, and the liquid and gas flow external to the contact media
7 such that the gas leaves through the gas outlet in saturated state;
8 a heater;
9 a chiller for chilling the liquid;
10 a gas outlet line connecting the gas outlet to the heater;
11 a liquid outlet line connecting the liquid outlet to the chiller, wherein the liquid flows
12 through the liquid inlet, the contactor, the liquid outlet and the chiller;
13 a saturated temperature sensor associated with the gas outlet line and upstream of the
14 heater;
15 a dry bulb temperature sensor associated with the gas outlet line and downstream of the
16 heater;
17 a gas temperature set point;
18 a relative humidity set point; and
19 a controller, including a computer, coupled to the saturated temperature sensor, the dry
20 bulb temperature sensor, the gas temperature set point, the relative humidity set point, and the
21 computer, wherein the saturated temperature sensor, the relative humidity set point, and the
22 gas temperature set point are inputs to the computer to produce a command signal adjusting
23 the cooling rate of the chiller, wherein the dry bulb temperature sensor and the gas temperature
24 set point are inputs to the computer to produce a command signal adjusting the heating rate of
25 the heater, wherein the controller adjusts the heater and the chiller to deliver the gas from the
26 heater at a desired temperature and relative humidity.

1 3. The system of claim 2, wherein the contactor further comprises a housing, and the
2 sprinkler includes at least one arm with a plurality of orifices along the arm and pointed between
3 parallel and opposite the top of the contact media and wherein the sprinkler engages in self-
4 rotation from reactive force exerted against the arm(s) from distribution of the liquid from the
5 orifices.

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

1
2 7. A system of controlling the temperature and humidity of air, comprising:

3 a contactor, including a housing with contact media, an air inlet and an air outlet, a water
4 inlet and a water outlet, wherein the water inlet admits water above the contact media and the
5 air inlet admits air below the contact media, and the water and air flow external to the contact
6 media such that the air leaves through the air outlet in saturated state;

7 a heater;

8 a chiller for chilling the water;

9 an air outlet line connecting the air outlet to the heater;

10 a water outlet line connecting the water outlet to the chiller, wherein the water flows
11 through the water inlet, the contactor, the water outlet and the chiller;

12 a saturated air temperature sensor associated with the air outlet line and upstream from
13 the heater;

14 a dry bulb air temperature sensor associated with the air outlet line and downstream
15 from the heater;

16 an air temperature set point;

17 a relative humidity set point; and

18 a controller, including a computer, coupled to the saturated air temperature sensor, the
19 dry bulb air temperature sensor, the air temperature set point, the relative humidity set point,
20 and the computer, wherein the saturated air temperature sensor, the relative humidity set point,
21 and the air temperature set point are inputs to the computer to produce a command signal
22 adjusting the cooling rate of the chiller, wherein the dry bulb air temperature sensor and the air
23 temperature set point are inputs to the computer to produce a command signal adjusting the
24 heating rate of the heater, wherein the controller adjusts the heater and the chiller to deliver the
25 air from the heater at a desired temperature and relative humidity.

1 Please add new claims 24-26 as follows:

2
3 --24. A system for controlling temperature and humidity of air, comprising:
4 a contactor, including contact media, an air inlet and an air outlet, a water inlet and a
5 water outlet, wherein the water inlet admits water into the contact media and the air inlet admits
6 air into the contact media, and wherein the water directly contacts the air in the contactor and
7 flow external to the contact media such that the air leaves the air outlet in saturated state;
8 a heater;
9 a chiller including a ~~heater~~^{heat} exchanger disposed outside the contactor;
10 an air outlet line connecting the air outlet to the heater;
11 a water outlet line connecting the water outlet to the chiller, wherein the water flows in a
12 closed-loop through the water inlet, the contactor, the water outlet and the chiller;
13 a saturated air temperature sensor associated with the air outlet line and upstream from
14 the heater;
15 a dry bulb air temperature sensor associated with the air outlet line and downstream
16 from the heater;
17 an air temperature set point;
18 a relative humidity set point; and
19 a controller, including a computer, coupled to the saturated air temperature sensor, the
20 dry bulb air temperature sensor, the air temperature set point, the relative humidity set point,
21 and the computer, wherein the controller adjusts the heater and the chiller to deliver the air from
22 the heater at a desired temperature and relative humidity.
23
24.
25
26
27
28
29
30

As Cont

1 25. A system for controlling the temperature and humidity of air, comprising:
2 a contactor, including non-temperature controlled contact media, an air inlet and an air
3 outlet, a water inlet and a water outlet, wherein the water inlet admits water above the contact
4 media and the air inlet admits air below the contact media, and wherein the water makes direct
5 contact with the air in the contactor as the water and the air flow around the non-temperature
6 controlled contact media such that the air leaves through the air outlet in saturated state;
7 a heater;
8 a chiller for adjusting the temperature of the water apart from the contact media;
9 an air outlet line connecting the air outlet to the heater;
10 a water outlet line connecting the water outlet to the chiller, wherein the water flows
11 through the water inlet, the contactor, the water outlet and the chiller;
12 a first air temperature sensor associated with the air outlet line and upstream of the
13 heater;
14 a second air temperature sensor associated with the air outlet line and downstream of
15 the heater; and
16 a controller coupled to the first and second air temperature sensors, the heater, and the
17 chiller, wherein the controller adjusts the heater and the chiller to deliver air from the heater at a
18 desired temperature and relative humidity.

19
20
21
22
23
24
25
26
27
28
29
30

Def cont

1 26. A system of controlling the temperature and relative humidity of air, comprising:
2 a contactor, including contact media, an air inlet and an air outlet, a water inlet and a
3 water outlet, wherein the water inlet admits water above the contact media and the air inlet
4 admits air below the contact media, and the water and air make intimate contact and flow
5 external to the contact media such that the air leaves through the air outlet in saturated state;
6 a heater;
7 a chiller for chilling the water;
8 a filter;
9 an air outlet line connecting the air outlet to the heater;
10 a water outlet line connecting the water outlet to the chiller, wherein the water flows in a
11 loop through the water inlet, the contactor, the water outlet and the chiller;
12 an air temperature set point;
13 a relative humidity set point;
14 a saturated air temperature sensor associated with the air outlet line and upstream from
15 the heater;
16 a dry bulb air temperature sensor associated with the air outlet line and downstream
17 from the heater; and
18 a controller coupled to the air temperature set point, the relative humidity set point, the
19 saturated air temperature sensor, and the dry bulb air temperature sensor, wherein the
20 controller adjusts the heater and the chiller based on the air temperature set point, the relative
21 humidity set point, the saturated air temperature sensor, and the dry bulb air temperature
22 sensor to deliver air from the heater at a desired temperature and relative humidity.--
23

24.
25
26
27
28
29
30